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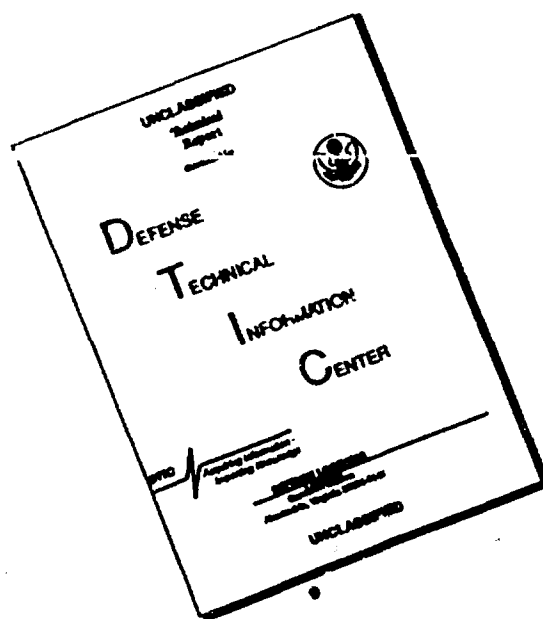
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A STUDY OF THE EFFECT OF SOWING DATE ON GROWTH, DEVELOPMENT AND YIELD OF  
BOL-BUGDA WHEAT UNDER DRY FARMING [NON-IRRIGATED] CONDITIONS

Doklady Akademii Nauk Azerbaydzhanskoy SSR  
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Wheat is cultivated over a wide area in Azerbaijan. It is cultivated in areas ranging from the lowlands that are 27 meters below sea level (Apshehon, Mugan') to the high altitude regions, up to 2700 meters above sea level (Kel'badzhar).

Almost all of the known species of wheat, with a wide diversity of species and varieties, are found in this region. The techniques for cultivating wheat in these regions differ widely. First of all this applies to irrigation. As a rule in the lowlands and partially in the foothills the wheat crops are irrigated, while those at higher altitudes are cultivated under dry farming conditions.

In connection with the study of variety agrotechnology referable to a new variety of soft wheat, Bol-bugda that has been released to the rayons and which is definitely more promising for dry farming areas, for a period of three years we made a study of one of the important factors: the effect of sowing date on growth, development and yield of this variety.

These studies were conducted on the territory of the Karabakhskaya Scientific Experimental Base of the Institute of Genetics and Breeding of the Academy of Sciences of Azerbaijan SSR. The experimental plot was 450 meters above sea level. This is an area of brown [chestnut] soil. The weather fluctuated markedly during the years of the investigation. The winter of 1958-1959 was characterized by marked temperature fluctuations and negligible snow. In February the mean monthly temperature low was

-6.7°. In April the mean low was 14.6°. Precipitation was 34 mm below normal. In May there was a negligible temperature rise and marked decline in precipitation. The mean temperature was 22°. With respect to precipitation the fall and winter of 1959-1960 were good. The spring months were quite good for growth and development of the plants. The month of May and early summer of 1961 were dry and hot. During the 1960-1961 vegetation period there were 126 mm of rainfall versus the normal of 350 mm with a mean temperature of 12.1° versus the 90.6° norm.

Such a fluctuation in amount and distribution of rainfall had a marked affect on growth and development of plants. This was observed in particular in 1959 when the precipitation level for May was 31 mm below normal. This year was characterized by a severe drought.

The variety under study was sown on four dates: 1 October, 15 October, 30 October and 15 November, at the normal rate of 3.5 million seeds per hectare. The variety Azerbaydzhan-1 served as a control.

The results of these studies of the effect of sowing dates on growth, development, and productivity of Bol-bugda wheat under dry farming conditions are submitted in the following.

1. Germination and Viability in the fields. Both these properties change to a significant extent depending on sowing date, as can be seen in Table 1. The table shows clearly that germination of both Bol-bugda and Azerbaydzhan-1 at the second and third dates is highest. There is a gradual decline in number of surviving plants under dry farming conditions depending on the sowing date, and this is observed in both Bol-bugda and the control. This is not associated with marked fluctuation in number of surviving plants.

2. Vegetation period. The study revealed that depending on the sowing dates and meteorological conditions in different years, the vegetation period fluctuates over a significant range. Table 2 submits data on duration of the period from germination to complete maturation. The table shows that this period fluctuates from 180 to 245 days under dry farming conditions. At the first sowing date the vegetation period for both Bol-bugda and the control is on an average 59 days longer than at the fourth date. This indicates that independently of the sowing date for the purpose of preserving their generic specificity the plants provide for maturation of seeds even with very late planting dates.

3. Yield. Analysis of the structural elements of yield, i.e. productive tillering [bushiness], spike productivity, absolute weight, and nature of the grain revealed that all of these elements are best manifested with the second and third sowing dates. Because of this the total yield of the variety studied is highest with the same sowing dates, which is apparent from the data submitted in Table 3.

Table 1  
Correlation between germination in the field and viability and sowing time  
for variety Bol-bugda (percentile)

Срок сева	1959					1960					1961					Среднее за три года				
	Полевая всхо- жсть (a)		Выживаемость (b)			Полевая всхо- жсть		Выживаемость			Полевая всхо- жсть		Выживаемость			Полевая всхо- жсть		Выживаемость		
	Б-6		Аз-1	Б-6	Аз-1	Б-6	Аз-1	Б-6	Аз-1	Б-6	Б-6	Аз-1	Б-6	Аз-1	Б-6	Б-6	Аз-1	Б-6	Аз-1	Б-6
	77.6	84.3	45.8	37.5	31.1	71.1	72.8	31.1	30.9	64.3	53.4	21.2	20.7	71.0	67.2	32.7	29.7	31.6	27.5	23.8
1. X	80.1	85.4	48.2	38.0	31.7	81.1	79.1	31.3	35.3	69.4	65.4	27.6	21.6	79.9	76.6	37.7	31.6	29.4	27.5	23.8
15. X	90.8	86.8	36.1	31.6	29.5	89.7	78.5	31.7	31.1	68.5	58.0	20.5	19.8	83.0	74.4	29.4	27.5	29.4	27.5	23.8
30. X	87.7	71.1	30.6	28.1	27.7	79.7	66.3	29.5	27.7	55.1	49.1	19.0	15.7	74.2	62.2	26.4	23.8	26.4	23.8	23.8

Legend:

- a) sowing date
- b) germination
- c) viability

- e) Bol-bugda
- f) Azerbaydzhani-1

**Table 2**  
Duration of vegetation period as related to sowing dates for variety Bol-bugda (in days)

Срок сева <sup>(a)</sup>	1959		1960		1961		Среднее за 3 года <sup>(d)</sup>	
	Б-6 <sup>(b)</sup>	Аз-1 <sup>(c)</sup>	Б-6	Аз-1	Б-6	Аз-1	Б-6	Аз-1
1. X	245	248	236	238	232	236	238	241
15. X	235	237	230	233	224	226	230	232
30. X	212	214	198	209	192	194	201	206
15. XI	186	189	181	183	180	182	183	185

Legend:

a) sowing dates  
b) Bol-bugda

c) Azerbaydzhani-1  
d) three-year mean

**Table 3**  
Correlation between yield and sowing date for variety Bol-bugda (centners per hectares)

Сроки сева <sup>(a)</sup>	1959		1960		1961		Среднее за 3 года <sup>(d)</sup>	
	Б-6 <sup>(b)</sup>	Аз-1 <sup>(c)</sup>	Б-6	Аз-1	Б-6	Аз-1	Б-6	Аз-1
1. X	30.4	27.1	18.5	16.8	16.6	13.3	21.8	19.1
15. X	38.2	33.7	20.0	19.3	17.7	13.2	25.3	21.1
30. X	28.1	27.4	19.0	16.8	17.2	14.1	21.7	19.4
15. XI	26.2	24.6	16.6	15.0	15.7	14.2	19.5	17.9

Legend:

a) sowing dates  
b) Bol-bugda

c) Azerbaydzhani-1  
d) three-year mean

It is also obvious from the table that under dry farming conditions the maximum yield of Bol-bugda wheat reaches 38.2 centners per hectare when it is sown on 15 October.

The study of growth and development of the newly released variety, Bol-bugda, over a period of three years revealed that this variety is notable for high drought resistance, immunity to diseases, and resistance to injuries under dry farming conditions, and because of the uniformity of stems and single levels of spikes there is considerable facility for mechanized harvesting.

According to all of the elements mentioned the new variety of soft wheat, Bol-bugda, has considerable advantages over the Azerbaydzhani-1 variety previously released to the rayons.

### Conclusions

1. Under the dry farming conditions of Karabakh, optimum sowing date is mid October for normal growth and development of Bolbugda wheat that has been newly released to rayons.
2. Under dry farming conditions the yield from Bol-bugda variety of wheat ranged from 19.5 to 25.3 centners per hectare as the mean over the three-year period of the study, depending on the sowing date.
3. This new variety of wheat, Bol-bugda, presents several advantages over the variety of the same species already released to the rayons, for which reason it should obtain widest distribution in the zone of its cultivation.

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